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09/709,758	11/10/2000	Oleg Y. Abramov	031356.0009.UTL1	4756

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EXAMINER

JACKSON, BLANE J

ART UNIT	PAPER NUMBER
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2685

DATE MAILED: 01/15/2004

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/709,758

Applicant(s)

ABRAMOV ET AL.

Examiner

Blane J Jackson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-32 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,486,832. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims are concerned with the same subject matter namely a direction-agile antennas used in a wireless network comprising an antenna capable of transmitting an electromagnetic signal in a direction having an antenna gain and a controller connected to the antenna, the controller capable of generating a direction-selection signal to steer the electromagnetic signal to a selected direction

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correspond to a high gain position in response to detecting an expected signal transmitted within the network.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 6, 11, 16-19, 22, 26, 31 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Johansson (U.S. Patent 6,487,423).

As to claims 1 and 18, Johansson teaches a wireless network comprising at least first and second communication devices (figure 2, column 3, lines 30-47) each comprising:

An antenna capable of transmitting an electromagnetic signal in a direction having an antenna gain (adaptive radio antenna (205), (2071), column 4, lines 1-12),

A transceiver connected to the antenna, the transceiver capable of detecting an expected signal and in response generating an antenna gain signal (figure 4a, 4b, 5, (column 6, lines 23-36),

An antenna control unit connected to the transceiver, the antenna control unit capable of generating a direction-selection signal to steer the electromagnetic signal to

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a selected direction corresponding to a high gain position in response to the antenna gain signal (figures 4a, 4b, 5, column 5, line 35 to column 6, line 22).

As to claim 2, Johansson teaches where the controller comprises:

A transceiver connected to the antenna, the transceiver capable of generating an antenna gain signal in response to detecting the expected signal (column 6, lines 23-36),

An antenna control unit capable of generating the direction-selection signal in response to the antenna gain signal (column 6, lines 1-18, figures 4a, 4b, column 5, lines 35-40).

As to claims 3 and 19, Johansson teaches the transceiver comprises a demodulator connected to convert the expected signal to a baseband signal (figures 4a, 4b, column 5, lines 40-58),

A modulator connected to transmit a radio frequency signal to the antenna (figure 4b, column 6, lines 23-42).

As to claims 6 and 22, Johansson teaches where the antenna control unit comprises a digital signal processor connected to receive the antenna gain signal (column 6, lines 1-18).

As to claims 11 and 26, Johansson teaches the antenna comprises a plurality of antenna elements capable of electronically steering the electromagnetic signal to the selected direction in response to the direction-selection signal (adaptive antennas in the reference means an antenna array consisting of several antenna elements, column 4, lines 60-66).

As to claims 16 and 31, Johansson teaches the antenna of at least one communication device (figure 2, radio node or radio terminal, each possibly part of a BSC, BTS or mobile station, column 3, line 41 to column 4, line 12) is capable of scanning in a plurality of directions until the electromagnetic signal transmitted by at least one communication device is detected by another one of the communication devices intended to receive the electromagnetic signal (prior art teaches the receiving device or radio terminal, with identification number verification, returns a physical channel message with active beamforming in a preferred direction estimated by the radio terminal, in effect have scanned for identity and direction, column 6, lines 43-54).

As to claims 17 and 32, Johansson teaches the communication device intended to receive the electromagnetic signal includes:

An antenna capable of receiving the electromagnetic signal transmitted by the at least one communication device (figures 2 and 5),

A controller connected to the antenna, the controller capable of generating a direction selection signal to steer the antenna to a selected direction corresponding to a

high gain position in response to detecting the electromagnetic signal transmitted by the at least one communication device (as discussed for claim 16, column 6, lines 43-54).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4, 5, 12-14, 20, 21 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johansson (U.S. Patent 6,487,423) with a view to Kiiski et al. (U.S. Patent 6,430,421).

As to claims 4 and 20, Johansson teaches a multi-channel, multi-antenna wireless communication system with beam steering functionality where the control and signal processing to determine beam steer may be carried out by digital signal processing but without component detail (figures 4a, 4b and column 5, line 12 to column 6, line 18). Johansson does not specifically discuss a low noise amplifier connected between the antenna and the demodulator or a power amplifier connected between the modulator and the antenna.

Kiiski also teaches a wireless transceiver with beam steer of the multiple antennas connected to multiple up/down conversion channel states that are digitally converted for baseband processing in a DSP block (figures 4a, 4b, column 6, line 19 to column 7, line 16). Kiiski discloses the LNA in the receive chain and power amplifier in

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the transmit chain, used in the normal fashion (figures 2a, LNA (210) and figure 2b, transmit amplifier (251), column 3, lines 15-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to employ in the transceiver circuits of Johansson the RF receive/transmit chain amplifiers of Kiiski to provide necessary operating signal levels well known in the art.

As to claims 5 and 21, Kiiski of Johansson modified, with reference to claims 3 and 4, illustrates the transceiver further comprises a baseband processor connected to the demodulator to generate the antenna gain signal (column 7, lines 17-40 and figure 9, column 8, lines 17-22). It would have been obvious to one of ordinary skill in the art at the time of the invention to recognize the general application of the DSP of Johansson in the configuration of Kiiski for efficient management of the signal baseband and antenna control signals.

As to claims 12-14 and 27-29, Johansson teaches an adaptive antenna preferable phase controlled as is known in the art (column 4, lines 60-66) but does not teach specific activation or physical arrangement of the antenna elements of the adaptive antenna array.

Kiiski discloses an adaptive radio system using an adaptive antenna that is comprised of an antenna array consisting of several antenna elements, the directional pattern of the antenna array being dynamically changed by phasing the signals of the antenna elements. Kiiski further teaches the array may consist of omnidirectional or

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directional antenna elements (for example patch or microstrip antennas) and arranged in a linear or planar manner (column 2, lines 29-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to realize the adaptive antenna of Johansson in the use and configuration as taught by Kiiski to realize an antenna array suitable for an electronically steered radiation pattern.

7. Claims 15, 7-10, 23-25 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johansson (U.S. Patent 6,487,423) with a view to Ha et al. (U.S. Patent 6,278,405).

As to claims 7-10 and 23-25, Johansson discloses the antenna comprises a plurality of antenna elements capable of electronically steering the electromagnetic signal to the selected direction in response to the direction-selection signal (column 4, line 60 to column 5, line 34). Johansson teaches the beam steering functionality is preferably phase controlled (electronic antenna beam steer control) but is silent as to the antenna control unit further comprises a step motor driver, motor and regulator (mechanical antenna beam steer control) signaled by the digital signal processor.

Ha discloses a wireless transceiver configured for mechanical antenna control with a step motor driver (figure 3, Driver (120)), Motor (123) and regulator (controller (107)) signaled by a digital signal processor (101). Ha further teaches the motor is connected between the antenna and the controller, the motor capable of rotating the antenna to the selected direction in response to the direction-selection signal (column 3, lines 9-61). It would have been obvious to one of ordinary skill in the art at the time of

the invention to alternatively adapt the beam steer system of Johansson for the mechanical steering approach of Ha to achieve the highest RSSI/ transmit signal power for a mobile wireless transceiver.

As to claims 15 and 30, Johansson teaches adaptive antenna elements for the two wireless devices (column 4, lines 1-12) but does not specifically teach the antenna comprises a microstrip antenna.

Ha teaches the antenna comprises a microstrip antenna (figure 2, flat antenna (110), column 3, lines 1-8). It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize in the antenna system of Johansson the microstrip antenna of Ha to apply one of several antenna designs that is directive and physically suitable for beamforming applications.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Krile (U.S. Patent 6,229,486) discloses a smart antenna of multiple antenna elements for mobile wireless applications. Usui (U.S. Patent 6,173,190) discloses a directional antenna used in a wireless telephone system under controller/servo motor directional control. Fuji (U.S. Patent 5,726,661) discloses a method to scan and point a directional antenna using a controller/ motor system in a wireless system. Yun (U.S. Patent 5,873,048) teaches a locator at a base station of a wireless telephone system to determine the position and trajectory of wireless terminals

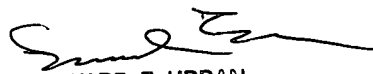
to adjust azimuthal and elevational angles of a direction antenna. Kraiem et al. (U.S. Patent 6,370,369) discloses wireless network communication between two terminals that identify through an omnidirectional antenna then sets up for data transmission through selected directional antennas. Borrás et al. (U.S. Patent 5,303,240) discloses scanning and beam steering an adaptive antenna for a wireless communication system.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J Jackson whose telephone number is (703) 305-5291. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (703) 305-4385. The fax phone number for the organization where this application or proceeding is assigned is (703) 812-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

BJJ


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